

**the VISA Family**







# Users Man

 **geveke**  
electronics



**geveke  
electronics**

**Geveke Elektronica bv**

**Kabelweg 25**

**P.O. Box 652, 1000 AR A**

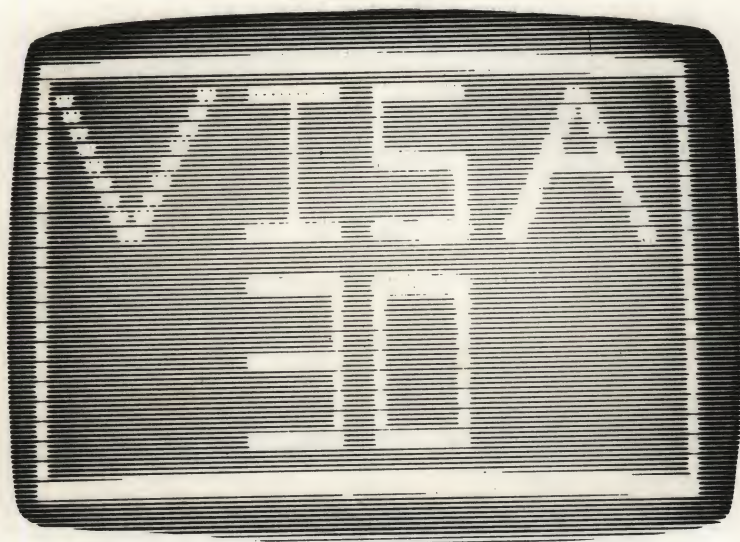
**The Netherlands**

**Phone (020) 582 9111**

**Telex 18556**

# **The VISA Family**

---



---

## **Users Manual**

THE UNIVERSITY OF CHICAGO



UNIVERSITY OF CHICAGO

CONTENTSINTRODUCTION

0	Introduction	INTRO-1
1	General information	INTRO-1
2	Technical summary	INTRO-1

OPERATION

0	Operation	
1	Power up sequence	2-1
2	Terminal operating modes	2-1
2.1	Operation in full duplex	2-2
2.2	Operation in half duplex	2-2
2.3	Operation in conversational mode	2-2
2.4	Operation in buffered mode	2-2
3	Unprotected / protected fields	2-2
4	End of message character	2-3
5	Video attributes	2-3
6	Monitor mode	2-3
7	End of block character	2-3
8	Set up mode	2-3

KEYBOARD

0	Keyboard	3-1
1	General information	3-1
2	Alphanumeric cluster	3-1
2.1	Different keyboards	3-1
2.2	Conversational use	3-1
2.3	Full duplex use	3-1
2.4	Half duplex use	3-1
2.5	Buffered mode use	3-2
2.6	ESC	3-2
2.7	BS	3-2
2.8	BREAK	3-2
2.9	TAB	3-2
2.10	DEL	3-3
2.11	CAPS-LOCK	3-3
2.12	RETURN	3-3
2.13	SHIFT	3-3



3.7	Delete line D/L	3-6
3.8	Clear screen CLR	3-6
3.9	Clear foreground CFGN	3-6
3.10	Auxiliary port enable with display	3-7
3.11	Auxiliary port disable	3-7
3.12	Function mode	3-7
3.13	Send	3-7
3.14	Cursor left	3-8
3.15	Cursor right	3-8
3.16	Cursor home	3-8
3.17	Cursor up	3-8
3.18	Cursor down	3-9
4	Status indicators	3-9
4.1	BUF	3-9
4.2	LOCK	3-9
4.3	PROT	3-9
4.4	LINE	3-9
4.5	CAPS	3-9

## REMOTE FUNCTIONS

0	Remote functions	4-1
1	General	4-1
2	Single code commands	4-1
2.1	BEL	4-1
2.2	Cursor left BS	4-1
2.3	Field tab	4-1
2.4	Cursor down	4-1
2.5	Carriage return CR	4-1
2.6	Column tab	4-1
2.7	Cursor right	4-1
3	Multiple code commands	4-1
3.1	Send cursor address	4-1
3.2	Keyboard unlock	4-1
3.3	Cursor down	4-1
3.4	Cursor up	4-1
3.5	Non stored CR	4-2
3.6	Remote send	4-2
3.7	Clear to end of line	4-2
3.8	Direct cursor address	4-2



3.20	Set foreground	4-3
3.21	Send character at cursor address	4-3
3.22	Display test pattern " H "	4-3
3.23	Set buffered mode	4-3
3.24	Set conversational mode	4-3
3.25	Set block transmit mode	4-3
3.26	Column back tab	4-3
3.27	Set page transmit mode	4-4
3.28	Remote field transmit	4-4
3.29	Auxiliary port enabled without display	4-4
3.30	Set transmit all mode	4-4
3.31	Set transmit unprotected only	4-4
3.32	Set line mode	4-4
3.33	Auxiliary port enabled with display	4-4
3.34	Display ASCII pattern	4-4
3.35	Auxiliary port disabled	4-4

## ULATIONS

0	Emulations	5-1
1	General	5-1
2	Differences of Hazeltine 1500-1510	5-1
3	Differences of Hazeltine Esprit	5-2

## STALLATION

0	Installation and interfaces	6-1
1	General	6-1
2	Installation	6-1
3	Power connection	6-1
4	Main port interface	6-1
5	Auxiliary port interface	6-2
6	Current loop interface	6-3
7	Rear panel control switches	6-3
7.1	Standard / reverse video	6-4
7.2	Current loop / EIA	6-4
7.3	Auto new line	6-4
7.4	Auto line feed	6-4
7.5	Half / full duplex mode	6-4
7.6	Conversational / buffered mode	6-4
7.7	50 / 60 Hz operation	6-4
7.8	Lead in code	6-4
7.9	End of message switches	6-5

D-1/3 Direct cursor address and send cursor address table.

E- Summary of remote commands

F- Selftest error messages

Revision :820510-

## INTRODUCTION

The VISA 30 is an ergonomically designed visual display terminal capable of operating in conversational and buffered editing modes.

It's non reflective green phosphor screen, comprehensive set-up mode and reliable fast entry detached keyboard make the VISA 30 a popular choice among operators.

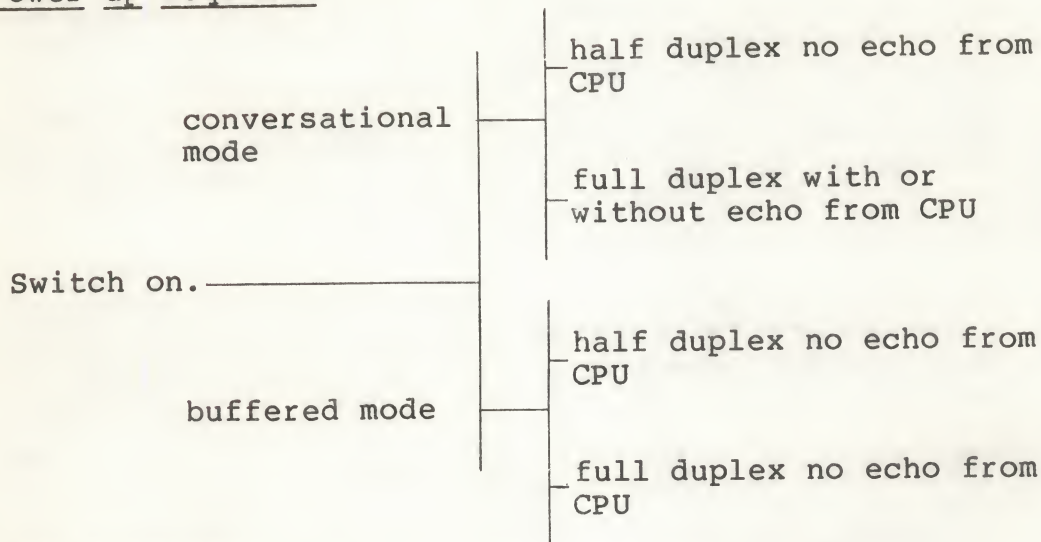
Conversions to popular manufacturers command structure, high communication speeds, and European character sets allow the VISA 30 to be configured to user requirements.

## Technical summary.

CRT	12" P31 green phosphor.
Format	24 lines x 80 characters.
Characters	7 x 10 matrix ( in 8 x 12 field ) 96 ASCII characters 32 control characters
Active display size	217mm x 145mm ( 8.57" x 5.7" )
Character size	2.1mm x 4.53mm ( 0.083" x 0.178" )
Screen attributes	high intensity low intensity
Cursor type	selectable slow, fast or none blinki block, underline or none type.
Keyboard	capacitive detached separate numeric keypad besides the alphanumeric keys selectable audio keyclick

Visual indicators	On-line Keyboard lock / protect mode buffered mode caps lock
Power / freq.	110, 220 VAC 50, 60 Hz 0.16 Amp at 220 VAC
Dimension monitor	383 mm depth ( 15 inch ) 369 mm width ( 14.5 inch ) 322 mm height ( 12.6 inch )
keyboard	178 mm depth ( 7 inch ) 420 mm width ( 16.53 inch ) 69 mm height ( 2.71 inch ) ( maximum height at rear side )
Weight	12,5 Kg ( 27,5 Lbs )
Environment	0 to 40 degrees centigrade operati -20 to 65 degrees centigrade stora up to 90 % relative humidity non- condensing
Diagnostics	power up RAM, ROM, keyboard, audib bel and status indicators test.
External controls	Power on / off contrast baud rate parity word length stop bit mark / space EIA / current loop half / full duplex auto line feed auto new line reverse video refresh rate end of message



0 OPERATION1 Power up sequence

Run selftest

Clear screen into unprotected spaces

Put cursor in home position

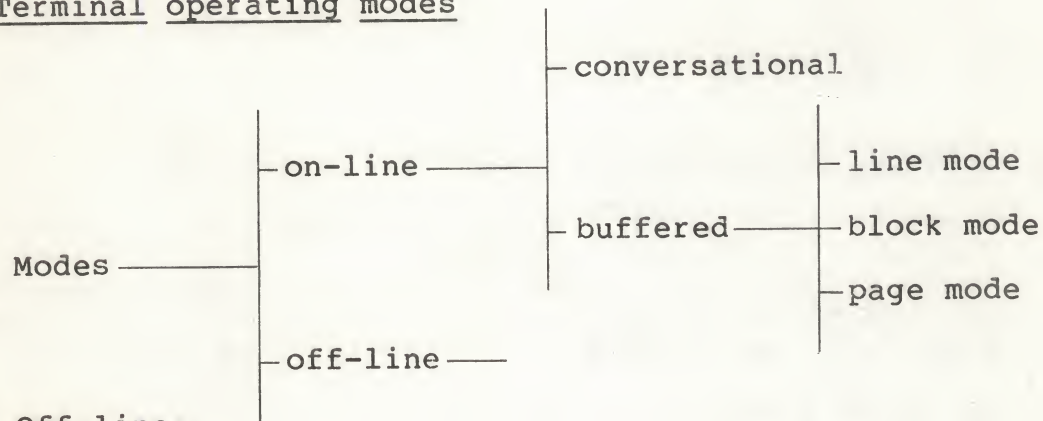
Initialize as indicated by switches e.g.

-refresh rate

-auto new line

-half / full duplex

-etc. ( see also set up mode )

2 Terminal operating modes

## 2.1 Operation in full duplex

In full duplex mode the codes generated by the keyboard are immediately transmitted. Depending upon the equipment which receives these codes, they will or will not be echoed back to the terminal.

If the codes are echoed back, action will be taken as though these codes are remote commands. If no codes are echoed, no action will be taken by the terminal.

## 2.2 Operation in half duplex

In half duplex operation the codes generated by the keyboard are transmitted and also internally echoed to the terminal where they will be interpreted as remote commands.

## 2.3 Operation in conversational mode

In conversational mode all characters from the keyboard are immediately transmitted, depending on the half or full duplex state and/or remote echoing displayed on the screen.

## 2.4 Operation in buffered mode

In buffered mode all characters from the keyboard are stored in high intensity on the screen for later transmission.

Four different types of buffered mode are available to accomodate the user's needs. ( Page, Block, Line, and Field. See also chapters 3.3.13 - 4.3.6 - 4.3.25 - 4.3.27 - 4.3.28 - 4.3.32 )

## 3 Unprotected / protected fields

These fields are also known as foreground / background or high / low intensity fields.

Depending upon the current active mode, characters will be stored in display memory and will be displayed accordingly as high or low intensity characters.

It is not possible in buffered mode to enter characters



### End of message character

The end of message character can be switched between CR ( hex 0D ), EOT ( hex 04 ), ETX ( hex 03 ), or NUL ( hex 00 ) character. This is to accomodate the varying requirements of computer-systems.

### Video attributes ( High / low intensity )

During an insert character or a delete character the video attributes which are currently active will be taken as the attribute character for that position on the screen.

Also for an insert line or a delete line the currently active attribute character will be taken for the information following.

In buffered mode the characters entered from the keyboard will have the currently active attribute characters.

### Monitor mode

No monitor mode will be available in buffered mode as all control characters will be stored as nondisplayable but transmittable characters.

In conversational mode all control characters are displayed in high intensity to let the user know what codes are generated by either the CPU or by the user via the keyboard.

### End of block character

The end of block character is displayed on the screen. If in block mode, it will be a rectangular block.  
( hex 60 )

## Key    Function

- 1      Enter buffered mode.  
To change from interactive into buffered operating mode.
- 2      Enable / disable keyclick.  
This is an alternating function key.
- 3      Transmit unprotected only / transmit all.  
This is an alternating function key. It will only be active in buffered mode. It informs the terminal to transmit all data to the CPU ( protect off ) or to transmit only the high intensity fields to the CPU ( protect on. )
- 4      Monitor mode on / off.  
This is an alternating function key. It is only possible to use the monitor mode in conversational mode. After activating this mode, all control characters will be displayed on the screen. This is especially useful for program debugging to see if the right codes have been sent to the terminal for certain expected functions.
- 5      Auto repeat on / off.  
This is an alternating function key. It allows the operator to switch the keyboard repeat on and off.
- 6      Margin bell on / off.  
This is an alternating function key. By activating this function the terminal will give an audible signal when the cursor passes the 72nd character on a line. This is especially useful for preparing letters, etc.
- 7      Cursor block / line.  
This feature gives a choice of cursor representation types. To make your choice, press the set up key and this key.
- 8      Cursor fast blink / slow blink / steady / nothing.  
This feature gives a choice of cursor representations. To make your choice, press the set up key

Fault in:

Char. RAM ROM COMM KBD

A	x			
B		x		
C	x	x		
D			x	
E	x		x	
F		x	x	
G	x	x	x	
H			x	
I	x			x
J		x		x
K	x	x		x
L			x	x
M	x		x	x
N		x	x	x
O	x	x	x	x

; Display all H's  
: Display program type

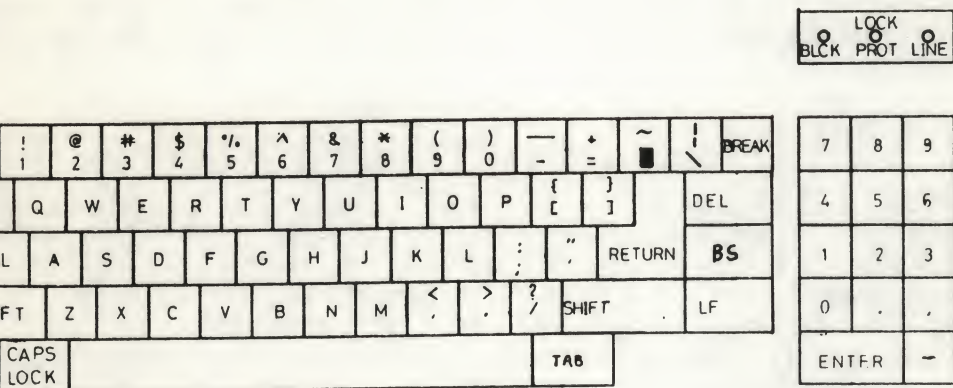
THIS PAGE INTENTIONALLY LEFT BLANK



## Keyboard

The keyboard consists of three main parts :

- alphanumeric cluster.
- numeric / function cluster.
- status indicators.



## 2 alphanumeric cluster

2.1 The alphanumeric cluster is arranged to facilitate international character sets.

For this reason, special keycaps will replace the original ones. The generated key-codes will also be changed. ( See Appendix A. )

2.2 In conversational mode all keys function in the same way as a normal typewriter keyboard. When lower case character font keys are selected, the code belonging to the lower case character will be transmitted. If a key is pressed in conjunction with the SHIFT key, the upper case code will be transmitted. If a key is pressed in conjunction with the CTRL key, then a special control character will be transmitted.  
(See Appendix B.)

2.3 In full duplex mode the codes generated by the keyboard are immediately transmitted. Depending upon the

3.2.5 In buffered mode all characters will be stored in memory for later transmission.

### 3.2.6 ESC ( hex 1B)

This key generates the ASCII character ESC ( Hex.1B). This character will be used as the character to inform the terminal that a special action must be performed depending on the character(s) following. ( If Tilde is selected as the lead-in character, it has no special function.)

### 3.2.7 BS ( hex 08 )

#### Interactive mode:

Transmits a backspace code in full duplex mode and the cursor will move one position to the left. If the first position of a line is reached, the cursor will wrap to the last position of the previous line. If the cursor is in the Home position, it will move to the last position of the last line.

#### Buffered mode :

In block, line, or page mode the ASCII BS code will be stored and the cursor will advance to the next position. The cursor left key must be used to backspace in this mode.

### 3.2.8 BREAK

This key must be pressed in conjunction with the SH key to generate a break signal on the line. The signal, which is a space condition on the output data line, has a duration of 200 to 250 milliseconds. ( The keys must be pressed to prevent accidental use.)

### 3.2.9 TAB

#### Field tab : ( Hex 09 )

Pressing the TAB key generates the TAB code ( hex 09). In full duplex when echoed, in Half duplex, or in buffered mode the cursor will advance to the first character of the next foreground field. If such a field



Column tab: ( SO hex 0E )

Pressing the TAB key in conjunction with the CTRL key will generate the code SO ( hex 0E.) In full duplex when echoed, in half duplex, or in buffered mode the cursor will be repositioned to the next column tab (the n'th x 8 column.) When the cursor is on the 72nd position ( or on a position up to 79, ) this command will only move the cursor one position to the right. If the cursor is in the last column ( n=79, ) the cursor will not move.

Column back tab: ( '\*' hex 27 )

Pressing the TAB key in conjunction with the CTRL and SHIFT key will generate the lead-in code ESC or Tilde ( hex 1B or 7E ) as set by switches; this subsequently generates the column back tab code ( hex 27.) In full duplex when echoed, in half duplex, or in buffered mode the cursor will be repositioned to the foregoing column tab ( the n-1 x 8th column.) If the cursor is in the first column, it will not move.

2.10 DEL ( hex 7F )

This key transmits the code DEL (hex 7F.) The DEL code is ignored by the terminal when received.

2.11 CAPS LOCK

This key does not generate an output code, but insures that all alphabetic character key codes are transmitted as upper case characters.

2.12 RETURN ( CR hex 0D )

The RETURN key will generate the CR code ( hex 0D.) In full duplex when echoed, in half duplex, or in buffered mode the cursor will be repositioned at the beginning of the same line. Whenever the auto LF switch is on, then the cursor moves to the following row. In interactive mode the terminal will scroll if this happens on the last line. In buffered mode the cursor will stay on the last line and no scroll will occur. In buffered mode the CR will be stored for operations as described by send ( 3 3 13 )

### 3.2.14 CTRL

This key does not generate an output code, but insures that a special control code is transmitted from most keys. ( See Appendix B.)

### 3.2.15 LF ( hex 0A )

This key will generate the LF code ( hex 0A.) In full duplex when echoed, in half duplex, or in buffered mode the cursor will move to the next row in the same column. If the cursor is on the bottom row of the display, a roll-up will occur. When the auto LF switch is on, the LF code is ignored by the terminal. In buffered mode the LF code is stored and not executed.

### 3.2.16 On-line

This key must be pressed in conjunction with the Shift key to prevent inadvertent changes in the on-line status. The on-line condition exists only when the on-line indicator is illuminated.

( see specification V24, Section 4, for a functional description.)

The on-line key in conjunction with the Shift key must be pressed again to exit.

## 3.3 Numeric / function cluster

3.3.1 In normal mode the keys in this cluster will generate the codes listed in Appendix B.

If used in conjunction with the Shift key terminal functions will be executed as described below.

### 3.3.2 ENTER

This key duplicates the RETURN key.

### 3.3.3 SET UP

Pressing the comma key in conjunction with the Shift key will put the terminal in set up mode. The next key depression in the top row 1 to 9 will set the terminal in a certain mode. E.g. keyclick on/off.

( See Appendix C. )



ted character or the end of the line.) After insertion of characters, the cursor will move one position to the right. If the next position is a protected field, the cursor will jump to the first unprotected character of a following field. In this case, the bell will sound to alert the operator. During a field insertion, characters shifted out at the right side of the field are lost. If the last field ends at the end of the line, characters shifted out at the end of the line are lost.

### Page insert character

Key 7 pressed in conjunction with CTRL will change the insertion of characters in such a way that the entire display will be thought of as one line of data. By inserting characters there will be a wrap-around action from line to line where fields can also be involved. If an unprotected field ends on a line where the next line starts with an unprotected field, it will be considered one field.

### .5 D/C delete character

#### Line / Field delete character

Delete character is only used in buffered mode ( line, page, or block. )

After pressing key 9 in conjunction with Shift, the character at the cursor position will be deleted and all subsequent characters will move one position to the left and the utmost right position in the line or field will be replaced with spaces.

The delete function will be field or line limited. (A field is defined as a number of characters between protected fields where the end of the line is also the beginning of a protected field.)

### Page delete character

Pressing key 9 in conjunction with CTRL will delete character by character on a page basis. In this case, the page has to be thought of as one line of data with fields where a field does not end at the end of a line,

transmitted followed by the code SUB (hex 1A.) The action is the same in full duplex when echoed, in half duplex, or in buffered mode. In buffered mode no code will be transmitted.

### 3.3.7 D/L delete line

After key 3 in conjunction with Shift is pressed, the line which the cursor was on will be deleted and all lines below it will move up one line. The last line of the page will be filled with spaces.

Depending upon which switch is selected, the lead-in code ESC (hex 1B) or Tilde (hex 7E) will be transmitted followed by the code DC3 (hex 13.) The action is the same in full duplex when echoed, in half duplex, or in buffered mode. In buffered mode no codes will be transmitted.

### 3.3.8 CLR clear screen

#### interactive mode:

When key period in conjunction with Shift is pressed, two codes are transmitted: lead-in code ESC (hex 1B) or Tilde (hex 7E), as selected by switches, followed by FS (hex 1C.) In full duplex mode the action performed depends upon the system to which the terminal is connected. If the system does not send these codes back to the terminal, no action is performed; otherwise, the entire screen is cleared to foreground spaces and the cursor will appear at the HOME position. In half duplex mode the two codes are transmitted and the function as described above will be performed.

#### buffered mode:

In buffered mode no codes will be transmitted; however, the function as described above will be performed.

### 3.3.9 CFGN clear foreground

#### interactive mode:

Pressing key period in conjunction with CTRL will transmit two codes: lead-in code ESC (hex 1B) or Tilde (hex 7E), as selected by switches, followed by the code GS (hex 1D.) In full duplex mode no action occurs if the system to which the terminal is connected



### .10 Auxiliary port enabled with display

Pressing the minus key in conjunction with the Shift key will only send the received information to the auxiliary port without being displayed or processed by the terminal. ( only if the option is installed )

### .11 Auxiliary port disabled

Pressing the minus key in conjunction with the CTRL key will disengage the auxiliary port from terminal received data. ( only if the option is installed )

### .12 FUNC function mode

After pressing the zero key in conjunction with the Shift key the terminal will wait for another key to be pressed. The audible alarm will sound to alert the operator. After the second key is pressed, the terminal will transmit a three character message consisting of :

first character	: ESC ( hex 1B )
second character	: Code of the key which is pressed
third character	: End of message character as selected by switches.

If this key is erroneously pressed, pressing it a second time will terminate this feature.

In buffered mode this character string will be immediately transmitted and not stored. Only those keys which normally are capable of producing a code between 00 ( hex ) and 7F ( hex ) will be accepted for the second key. All other keys are not allowed to be pressed and will cause the function to exit without sending any characters at all.

In half-duplex mode the characters will only be transmitted and not stored in display memory.

### 3.13 SEND

Pressing the enter key in conjunction with the Shift key will only function in buffered mode. Depending on the mode, this will initiate a page, line, or block transmission with all data or only the unprotected data. The keyboard will be locked during transmission.

acters received, ( with the exception of suspend and resume characters which have to be honoured, ) during either a page, line, or block transmission will be ignored by the terminal.

### 3.3.14 Cursor left

Pressing key 4 in conjunction with Shift will transmit the BS ( hex 08 ) code, with the exception of in buffered mode when only the function will be performed and no codes will be transmitted. In full duplex when echoed, in half duplex, or in buffered mode the cursor will move one position to the left. When the first character of a line is reached, the cursor will move to the last position of the previous line. When HOME is reached, the cursor will move to the last position of the last line.

### 3.3.15 Cursor right

Pressing key 6 in conjunction with Shift will transmit the DLE ( hex 10 ) code, with the exception of in buffered mode when only the function will be performed and no codes will be transmitted. In full duplex when echoed, in half duplex, or in buffered mode the cursor will move one position to the right. When the last character of a line is reached, the cursor will move to the first character of the following line. If the last character of line 24 is reached, the cursor will move to HOME position.

### 3.3.16 HOME

Pressing key 5 in conjunction with Shift will transmit the lead-in code, as selected by switches, ( ESC hex 1B or Tilde hex 7E ) followed by DC2 ( hex 12.) In buffered mode there will be no transmission; only the function will be performed. In full duplex when echoed, in half duplex, or in buffered mode the cursor will move to HOME position.

### 3.3.17 Cursor up

Pressing key 8 in conjunction with Shift will transmit



### 3.18 Cursor down

Pressing key 2 in conjunction with Shift will transmit the lead-in code, as selected by switches, ( ESC hex 1B or Tilde hex 7E ) followed by VT ( hex 0B. ) In buffered mode there will be no transmission; only the function will be performed. In full duplex when echoed, in half duplex, or in buffered mode the cursor moves down one row in the same column. If the cursor is at the last row, then the cursor will move to the top row in the same column.

## 4. Status indicators

### 4.1 BUF buffered mode

This indicator will be on whenever the terminal is in buffered mode. Buffered mode can either be page, line, or block transmission.

### 4.2 LOCK

This indicator will blink whenever the terminal keyboard is locked.

### 4.3 PROT

This indicator will be on whenever the terminal is in transmit unprotected only mode.

It indicates that the protected fields will not be transmitted in case of a buffered transmission.

### 4.4 Line

This indicator will be on whenever the terminal is on-line. ( See V24 recommendations.)

### 4.5 CAPS

This indicator will be on whenever the terminal keyboard is operated in the capitals only mode.

THIS PAGE INTENTIONALLY LEFT BLANK

## Remote functions

Some remote functions may be performed by a single command while other functions require two, three, or more codes. In case of multiple codes, the first code will be the ESC or Tilde ( hex 1B or 7E ), as selected by switches.

### Single code commands

- .1 Bel ( BEL hex 07 )
- .2 Cursor left ( BS hex 08 )  
See also 3.2.7 / 3.3.14
- .3 Field tab ( HT hex 09 )  
See also 3.2.9
- .4 Cursor down ( LF hex 0A )  
See also 3.2.15
- .5 Carriage return ( CR hex 0D )  
See also 3.2.12
- .6 Column tab ( SO hex 0E )  
See also 3.2.9
- .7 Cursor right ( DLE hex 10 )  
See also 3.3.15

### Multiple code commands

All commands must be sent without intervening characters.

\* is used to indicate the leadin code ESC or Tilde ( hex 1B or 7E ) as selected by switches.

- .1 Send cursor address ( \*ENQ hex 05 )  
The terminal transmits the X and Y coordinates followed by the selected end of message character.  
(See Appendix D.)



#### 4.3.5 Non stored CR ( \*CR hex 0D )

After receiving this command, the function of CR will be performed; however, the CR code itself will not be stored under any circumstances. Used in buffered mode to permit the whole line to be sent instead of the line up to the stored CR.

#### 4.3.6 Remote send ( \*SO hex 0E )

See also 3.3.13

#### 4.3.7 Clear to end of line ( \*SI hex 0F )

All characters following and including the present cursor position through the end of the line will be cleared to foreground spaces.

#### 4.3.8 Direct cursor address ( \*DC1 X Y )

This is a four character command where the X and Y coordinates are used to address the cursor. The row coordinates are designated Y, the range is from 0 to 23. The column coordinates are designated X, the range is from 0 to 7. The four characters in this command must be received without intervening characters. See Appendix D for all possible combinations.

#### 4.3.9 Cursor home ( \*DC2 hex 12 )

See also 3.3.16

#### 4.3.10 Delete line ( \*DC3 hex 13 )

See also 3.3.7

#### 4.3.11 Field back tab ( \*DC4 hex 14 )

See also 3.2.9

#### 4.3.12 Keyboard lock ( \*NAK hex 15 )

After receiving this command, the keyboard is locked and no operator entries are possible.

#### 4.3.13 Clear to end of field ( \*SYN hex 16 )

The foreground field where the cursor is currently positioned will be cleared to spaces. The cursor will be repositioned at the beginning of that field. Nothing will be cleared if the cursor is positioned in the background field; however, the cursor will be repositioned to the first position of the new foreground field.

### 4.3.16 Set background ( \*EM hex 19 )

All data received after this command will be displayed in low intensity. In block mode they are automatically protected against operator entries and can only be erased with a clear page command. In block mode when the cursor resides in a background field, an operator entry will move the cursor to the first position of the next foreground field and the alarm will sound.

### 4.3.17 Insert line ( \*SUB hex 1A )

See also 3.3.6

### 4.3.18 Clear screen ( \*FS hex 1C )

See also 3.3.8

### 4.3.19 Clear foreground ( \*GS hex 1D )

See also 3.3.9

### 4.3.20 Set foreground ( \*US hex 1F )

All data received after this command will be displayed in high intensity. In all modes this is unprotected data and can be overwritten by an operator.

### 4.3.21 Send character at cursor address ( \*! hex 21 )

The terminal will transmit the character at the present cursor position. The cursor will remain at its current position. The cursor's up, down, left, right, and direct addressing makes it possible to read any character at any position on the screen.

### 4.3.22 Display test pattern ( \*" hex 22 )

After this command is given, the display will be filled with a pattern of "H"s which allows the display to be easily adjusted.

### 4.3.23 Set buffered mode ( \*# hex 23 )

The terminal will enter the buffered mode.

### 4.3.24 Set conversational mode ( \*\$ hex 24 )

The terminal will return to interactive conversational mode.

### 4.3.25 Set block transmit mode ( \*% hex 25 )



### 3.27 Set page transmit mode ( \*( hex 28 )

After receiving this command, the terminal will be set to page mode. The operator must press the ENTER key in conjunction with the Shift key or the terminal must receive the remote send command to transmit a page of data.

### 3.28 Remote field transmit ( \*) hex 29 )

This command will transmit the data in the foreground field where the cursor is currently positioned. The final character will be the selected end of message character. The cursor will be repositioned to the beginning of the field. While receiving the command if the cursor resides into a background field, there will be no transmission of data. The cursor will be repositioned to the first position of the next foreground field. If there are no more foreground fields, the cursor will remain at its enabled position.

### 3.29 Auxiliary port enable without display ( \*\* hex 2A )

Only if option is installed. See also 3.3.10

### 3.30 Set transmit all mode ( \*+ hex 2B )

After receiving this command, the terminal will transmit protected and unprotected data fields in a buffered send operation.

### 3.31 Set transmit unprotected only ( \*, hex 2C )

After receiving this command, the terminal will transmit only the unprotected data fields in a buffered send operation. The protect light will be turned on.

### 3.32 Set line mode ( \*. hex 2E )

After receiving this command, the terminal will be set to line mode. The operator must press the Enter key in conjunction with the Shift key or the terminal must receive the remote send enabled to transmit a line of data.

### 3.33 Auxiliary port enable with display ( \*/ hex 2F )

Only if option is installed.

### 3.34 Display ASCII pattern ( \*8 hex 38 )

After receiving this command, the terminal will display



## EMULATIONS

### General

The differences, as described in the previous chapters, between the Visa 30 and various terminals will be listed by type.

### Hazeltine 1500-1510

Differences with H1500-H1510

Set up mode  
Not available

Insert character  
Not available.

Delete character  
Not available.

Cursor left BS

The cursor will not wrap from the home position to the last line (position 80) when the command is given with the cursor at Home.

Field tab / field back tab

The cursor will not wrap from the last field to the first field or from the first field to the last field when more fields are available, iff the command is given in the last or first field on the screen.

Column backtab  
Not available.

Cursor right

The cursor will not wrap to the Home position when the command is given on line 24 (position 80.)

Cursor down

The cursor will not wrap to the top line when the

- 4.3.28     Remote field transmit  
            Not available.
- 4.3.29     Enable aux.port without display  
3.3.10     Not available.
- 4.3.32     Enable aux.port with display  
            Not available.
- 4.3.34     Display ASCII pattern  
            Not available.
- 4.3.45 /   Disable aux.port  
3.3.11     Not available.

### 5-3        Hazeltine Esprit

All the differences of the 1500 and 1510 with t  
exceptions of :

Clear to end of field  
Remote field transmit  
Enter function keypad mode 1, 2, or 3  
Exit function keypad mode  
Send character at cursor address  
Display test pattern "H"  
Enable aux.port without display  
Enable aux.port with display  
Disable aux.port  
Display ASCII pattern

Other differences are :

chapter     difference

- 4.3.8       Non stored CR  
            Not available.
- 4.3.30       Set block transmit mode  
            Not available.

3.12      Function mode  
          Not available.

Not available in VISA 30:

Enter function keypad mode 1,2 and 3

Hit function keypad mode

Horizontal TAB ( This is column tab in VISA 30, but remote  
command is different.)



THIS PAGE INTENTIONALLY LEFT BLANK

## 0 Installation and interfaces

### 1 General

Place the unit in the desired work area in such a way that air can circulate freely around the unit. Be sure not to cover the air vents as this might cause damage to the unit. In extreme environments care must be taken not to exceed the unit's specifications.

### 2 Installation

- Plug the keyboard cable into the receptacle at the rear of the unit.
- Connect the communications cable to the main port.
- Check that the power connection is in accordance with the unit as supplied.
- If there is an auxiliary device, connect it to the aux. port. ( If option installed )
- Set the control panel switches on the rear of the unit according to the required operating mode.

### 3 Power connection

Check identification plate for the voltage and frequency of your unit. The frequency can easily be adjusted by switching the 50 / 60 Hz switch to the desired position.

If the voltage does not comply to your unit, ask your dealer to change the voltage or use a voltage transformer.

### 4 Main port interface

The main port interface consists of a 25 pin male connector. Signals and connector are as defined in the EIA RS-232C specification.

Pin	EIA	CCITT	Function	Name	DTE-D
1	AA	101	frame ground	FG	< ----
2	BA	103	transmitted data	TD	- ----
3	BB	104	received data	RD	< ----
4	CA	105	request to send	RTS	-----
5	CB	106	clear to send	CTS	< ----

**NOTE:**

The current loop is intended for 20mA use. As standard current will be supplied by the equipment to which the terminal is connected.

If the terminal has to supply the current, ask your dealer to install the necessary components.

**3.5 Auxiliary port interface      OPTION**

The terminal is optionally supplied with an auxiliary interface which has the capacities to pass information from the main port to the auxiliary port as well as from the auxiliary port to the main port.

To enable or disable the auxiliary port either remote commands or commands via the keyboard may be used.

( See also 3.4.14 - 3.4.15 - 3.4.16 and 4.3.34 - 4.3.35 - 4.3.45 )

The signals used are in accordance with the EIA RS-232C specifications.

Pin	EIA	CCITT	Function	Name	AUX
1	AA	101	frame ground	FG	<---
2*	BB	104	received data	RD	<---
3*	BA	103	transmit data	TD	----
4	CA	105	request to send	RTS	<---
5*	CB	106	clear to send	CTS	----
6*	CC	107	data set ready	DSR	----
7	AB	102	signal ground	SG	<---
8*	CF	109	data carrier detect	DCD	----
20	CD	108.2	data terminal ready	DTR	<---

Table 6-2 Auxiliary port pin assignments

**NOTE:**

These signals differ from the description given in the EIA RS-232C specification. When a device is connected to the auxiliary port, the control signals from the DC are passed on to the auxiliary device. The control



## 6 Current loop interface.      OPTION

Standard current loop is the passive type where the other device will supply the current. If the terminal has to supply the current, additional components have to be installed. Please consult your dealer in this case.

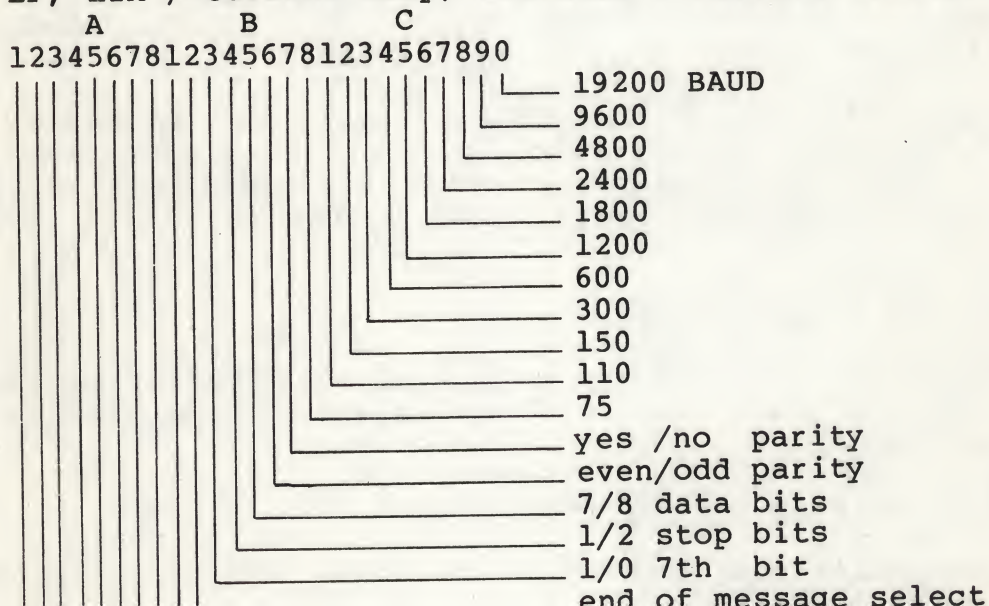
### Pin      Function

23	Receive current loop -
25	Receive current loop +
17	Transmit current loop +
24	Transmit current loop -

Table 6-3      Current loop pin assignments on main port.

## 7 Rear panel control switches

There are 26 switches on the rear panel used to select the terminal's operating parameters. Functions to select include e.g. Baud rate, parity, end of message lead in character, refresh rate, mode, auto NL, auto LF, EIA / current loop, standard / reverse video.



### .7.1 Standard / Reverse video

Either normal white characters on a dark background or dark characters on a white background can be selected with this switch.

### .7.2 Current loop / EIA

Either EIA RS-232C signals or current loop will be selected with this switch.

### .7.3 Auto new line

If on, the cursor will auto wrap around at the end of line to the first column. If this happens on line 24 the top row will scroll off the screen and the bottom row will be blanked out. If off, the data which is entered in the last column will overwrite the previous data in this column.

### .7.4 Auto line feed

If on, the cursor will, after receiving the CR code not only return to the beginning of the same line, but advance to the beginning of the next line. If this happens on line 24, a scroll up will occur and the bottom line will be blanked out.

In buffered mode the CR will be stored in memory and the cursor will advance to the beginning of the next line. If this happens on line 24, NO scroll up will occur. The cursor will move to the beginning of line 24.

### .7.5 Half / full duplex

Half or full duplex mode will be selected. Buffered mode is typically half duplex which is automatically selected.

### .7.6 Conversational / Buffered mode

Conversational mode or buffered mode will be selected after power up.

### 7.9 End of message switches

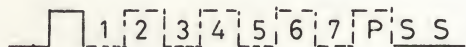
The end of message character will be selected by two switches.

switch 1	switch 2	end of message
off	off	NUL
on	off	ETX
off	on	EOT
on	on	CR

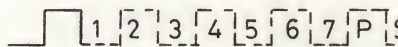
### 7.10 Parity and bit selection

Five switches are used to give the user all of the most commonly used combinations of bits / character and parity.

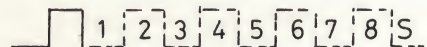
Switch					Function	
3	4	5	6	7		
x	off	on	on	on	7 bits, Even parity, 2 stop bits	
x	off	on	off	on	7 bits, Odd parity, 2 stop bits	
x	on	on	on	on	7 bits, Even parity, 1 stop bit	
x	on	on	off	on	7 bits, Odd parity, 1 stop bit	
on	off	off	x	off	8 bits, bit 8 one, 2 stop bits	
off	on	off	x	off	8 bits, bit 8 zero, 1 stop bit	
x	on	off	on	on	8 bits, Even parity, 1 stop bit	
x	on	off	off	on	8 bits, Odd parity, 1 stop bit	
Other combinations					7 bits, Even parity, 2 stop bits	



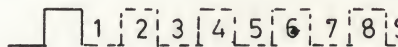
7 bits parity 2 stop bits



7 bits parity 1 stop



8 bits no parity 1 stop bit



8 bits parity 1 stop

### 7.11 Baud rate

The 11 switches select the desired baud rate.

The different baud rates are: 75, 110,



6.7.12 Direct connection

In case of a direct connection to another syst  
connect the terminals as follows.

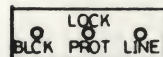
VISA 40

CPU

1	To	1
2	To	3
3	To	2
4 To 5		5 To 4
6 To 8 To 20		20 To 8 To 6
7	To	7

6.7.13 Modem connection

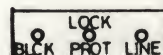
The terminal is specified for CCITT V24 USE.  
The moden must be strapped in accordance to 10  
Mode to work correct with the on-line switch o  
the terminal

Appendix A:

ON-LINE	!	@	f	\$	%	^	&	*	(	)	_	=	~	ü	BREAK
ESC	Q	W	E	R	T	Y	U	I	O	P	{	}		DEL	
CTRL	A	S	D	F	G	H	J	K	L	:	"		RETURN	BS	
SHIFT	Z	X	C	V	B	N	M	<	>	?	/		SHIFT	LF	
CAPS	CAPS LOCK									TAB					

7	8	9
4	5	6
1	2	3
0	.	.
ENTFR	-	

DUTCH KEYBOARD



820510

VISA 30

ON- LINE	!	@	#	\$	%	°	&	*	(	)	—	+	~	"/	BREAK
1	2	3	4	5	6	7	8	9	0	—	+	~	"/	BREAK	
ESC	Q	W	E	R	T	Y	U	I	O	P	Å	:		DEL	
CTRL	A	S	D	F	G	H	J	K	L	O	Æ	RETURN	BS		
SHIFT	Z	X	C	V	B	N	M	<	>	?	/	SHIFT	LF		
○ CAPS	CAPS LOCK											TAB			

LOCK  
BLOW PROT L

7	8
4	5
1	2
0	.
ENTER	

NORWEGIAN KEYBOARD

LOCK  
BLOW PROT L



0510

VISA 30

ON-LINE	!	"	£	\$	%	&	'	(	)	—	=	~	!	}	BREAK
ESC	Q	W	E	R	T	Y	U	I	O	P	@	{			
CTRL	A	S	D	F	G	H	J	K	L	+	*	:	RETURN	BS	
SHIFT	Z	X	C	V	B	N	M	<	>	?	/		SHIFT	LF	
CAPS LOCK											TAB				

	LOCK	
BLCK	PROT	LINE

7	8	9
4	5	6
1	2	3
0	.	,
ENTER	—	

UNITED KINGDOM KEYBOARD

	LOCK	
BLCK	PROT	LINE

LOCK  
BLCK PROT

ON- LINE	1 &	2 @	3 "	4 '	5 (	6 )	7 ^	8 !	9 %	0 _	°	—	>	■	BREAK
ESC	A	Z	E	R	T	Y	U	I	O	P	^	*	#	DEL	
CTRL	Q	S	D	F	G	H	J	K	L	M	%	RETURN	BS		
SHIFT	W	X	C	V	B	N	?	:	/	+	=	SHIFT	LF		
CAPS LOCK											TAB				

7	8
4	5
1	2
0	.
ENTER	

FRENCH KEYBOARD

LOCK  
BLCK PROT

## CHARACTER CODE TABLE

					b7	0	0	C	0	1	1	1	1
					b6	0	0	1	1	0	0	1	1
					b5	0	1	0	1	0	1	0	1
b4	b3	b2	b1	c		0	1	2	3	4	5	6	7
0	0	0	0	0		NUL	DLE	SP	0	③	P	⑧	
0	0	0	1	1		SOH	DC1	!	1	A	Q	a	c
0	0	1	0	2		STX	DC2	"	2	B	R	b	r
0	0	1	1	3		ETX	DC3	①	3	C	S	c	s
0	1	0	0	4		EOT	DC4	②	4	D	T	d	t
0	1	0	1	5		ENQ	NAK	%	5	E	U	e	u
0	1	1	0	6		ACK	SYN	&	6	F	V	f	v
0	1	1	1	7		BEL	ETB	'	7	G	W	g	w
1	0	0	0	8		BS	CAN	(	8	H	X	h	x
1	0	0	1	9		HT	EM	)	9	I	Y	i	y
1	0	1	0	A		LF	SUB	*	:	J	Z	j	:
1	0	1	1	B		VT	ESC	+	;	K	④	k	④
1	1	0	0	C		FF	FS	,	<	L	⑤	l	⑤
1	1	0	1	D		CR	GS	-	=	M	⑥	m	⑥



## National character set deviations.

[illegible]

Appendix B:

The following table lists the keystrokes for generating all the 128 possible USASCII codes. The Octal, Hex, and decimal value is also given for each character. If the control key and/or the shift key must be pressed in conjunction with another key, it will be indicated with c.X and s.X or c.s.X ( X stands for a key. )

<u>Octal</u>	<u>Hex</u>	<u>Dec</u>	<u>Ascii</u>	<u>Keys</u>
0	00	0	NUL	c.s.2 Null
1	01	1	SOH	c.A Start of header
2	02	2	STX	c.B Start of text
3	03	3	ETX	c.C End of text
4	04	4	EOT	c.D End of transmission
5	05	5	ENQ	c.E Enquiry
6	06	6	ACK	c.F Acknowledge
7	07	7	BEL	c.G Bell
0	08	8	BS	c.H Backspace
1	09	9	HT	c.I Horizontal tab
2	0A	10	LF	c.J Line feed
3	0B	11	VT	c.K Vertical tab
4	0C	12	FF	c.L Form feed
5	0D	13	CR	c.M Carriage return
6	0E	14	SO	c.N Shift out
7	0F	15	SI	c.O Shift in
0	10	16	DLE	c.P Data link escape
1	11	17	DC1	c.Q Device control 1
2	12	18	DC2	c.R Device control 2
3	13	19	DC3	c.S Device control 3
4	14	20	DC4	c.T Device control 4
5	15	21	NAK	c.U Negative acknowledge
6	16	22	SYN	c.V Synchronous idle
7	17	23	ETB	c.W End of block
0	18	24	CAN	c.X Cancel line
1	19	25	EM	c.Y End of medium
2	1A	26	SUB	c.Z Substitute
3	1B	27	ESC	ESC Escape
4	1C	28	FS	c.{ Field separator
5	1D	29	GS	c.} Group separator
6	1E	30	RS	c.~ Record separator
7	1F	31	US	c._ Unit separator
0	20	32	SP	space

054	2C	44	,
055	2D	45	-
056	2E	46	.
057	2F	47	/
060	30	48	0
061	31	49	1
062	32	50	2
063	33	51	3
064	34	52	4
065	35	53	5
066	36	54	6
067	37	55	7
070	38	56	8
071	39	57	9
072	3A	58	:
073	3B	59	;
074	3C	60	<
075	3D	61	=
076	3E	62	>
077	3F	63	?
100	40	64	@
101	41	65	A
102	42	66	B
103	43	67	C
104	44	68	D
105	45	69	E
106	46	70	F
107	47	71	G
110	48	72	H
111	49	73	I
112	4A	74	J
113	4B	75	K
114	4C	76	L
115	4D	77	M
116	4E	78	N
117	4F	79	O
120	50	80	P
121	51	81	Q
122	52	82	R
123	53	83	S
124	54	84	T
125	55	85	U
126	56	86	V
127	57	87	W



63	99	c
64	100	d
65	101	e
66	102	f
67	103	g
68	104	h
69	105	i
6A	106	j
6B	107	k
6C	108	l
6D	109	m
6E	110	n
6F	111	o
70	112	p
71	113	q
72	114	r
73	115	s
74	116	t
75	117	u
76	118	v
77	119	w
78	120	x
79	121	y
7A	122	z
7B	123	{
7C	124	}
7D	125	~
7E	126	
7F	127	DEL

\*  
\*  
\*  
\*

characters which may differ on foreign keyboards are  
marked with an \*. For these also see Appendix A-5.

320510

VISA 30

THIS PAGE INTENTIONALLY BLANK

endix Cup mode

the set up mode different features of the terminal may be changed during operation without transmitting any code. Pressing the SET UP key ( Comma key in conjunction with the ft key ) will put the terminal into the set up mode and the next key pressed will switch the terminal into the desired state and exit the set up mode. If the set up key is erroneously pressed, a second pressing will also exit the set up mode.

<u>after set up</u>	<u>function</u>	<u>at power up</u>
1	enter buffered mode	as per switch
2	enable / disable keyclick	disabled
3	X-mit unprotected only/all	all
4	monitor mode on / off	off
5	auto repeat on / off	on
6	margin bel on / off	off
7	block / line cursor	line
8	fast / slow blink cursor	slow
9	selftest start	auto
;	Display all H's	
:	Display program type	



THIS PAGE INTENTIONALLY BLANK

Appendix DDirect cursor address and Send cursor address Table

The coordinates returned by the Send cursor address are indicated with an asterix ( \* ). It is also recommended to use these codes for cursor addressing.

<u>Row #</u>	<u>Column #</u>	<u>Character</u>
0	0	NUL
1	1	SOH
2	2	STX
3	3	ETX
4	4	EOT
5	5	ENQ
6	6	ACK
7	7	BEL
8	8	BS
9	9	HT
10	10	LF
11	11	VT
12	12	FF
13	13	CR
14	14	SO
15	15	SI
16	16	DLE
17	17	DC1
18	18	DC2
19	19	DC3
20	20	DC4
21	21	NAK
22	22	SYN
23	23	ETB
24	24	CAN
25	25	EM
26	26	SUB
27	27	ESC
28	28	FS
29	29	GS
30	30	RS
31	31	US
32	32 *	Sp
33	33 *	!

13	45	*	-
14	46	*	.
15	47	*	/
16	48	*	0
17	49	*	1
18	50	*	2
19	51	*	3
20	52	*	4
21	53	*	5
22	54	*	6
23	55	*	7
	56	*	8
	57	*	9
	58	*	:
	59	*	;
	60	*	<
	61	*	=
	62	*	>
	63	*	?
0	64	*	@
1	65	*	A
2	66	*	B
3	67	*	C
4	68	*	D
5	69	*	E
6	70	*	F
7	71	*	G
8	72	*	H
9	73	*	I
10	74	*	J
11	75	*	K
12	76	*	L
13	77	*	M
14	78	*	N
15	79	*	O
16			P
17			Q
18			R
19			S
20			T
21			U
22			V
23			W
			X



*	4	*	d
*	5	*	e
*	6	*	f
*	7	*	g
*	8	*	h
*	9	*	i
*	10	*	j
*	11	*	k
*	12	*	l
*	13	*	m
*	14	*	n
*	15	*	o
*	16	*	p
*	17	*	q
*	18	*	r
*	19	*	s
*	20	*	t
*	21	*	u
*	22	*	v
*	23	*	w
	24	*	x
	25	*	y
	26	*	z
	27	*	{
	28	*	
	29	*	}
	30	*	~
	31	*	DEL

820510

VISA 30

THIS PAGE INTENTIONALLY BLANK

Appendix ESummary of remote commands

Ref description	LI	ASCII	Hex.	Key
End alarm		BEL	07	c G
Backspace		BS	08	BS
Hard tab		HT	09	TAB
Line feed		LF	0A	LF
Carriage return		CR	0D	RET
Column tab		SO	0E	c TAB
Cursor right		DLE	10	c P
End cursor address	x	ENQ	05	c E
Keyboard unlock	x	ACK	06	c F
Cursor down	x	VT	0B	c K
Cursor up	x	FF	0C	c L
Non-stored CR	x	CR	0D	RET
Note X-mit	x	SO	0E	c N
Car to end of line	x	SI	0F	c O
Select cursor address	x	DC1	x Y 11	c Q
Cursor home	x	DC2	12	c R
Erase line	x	DC3	13	c S
Hard backtab	x	DC4	14	c T
Keyboard lock	x	NAK	15	c U
Car to end of field	x	SYN	16	c V
Car to end of screen (background)	x	ETB	17	c W
Car to end of screen (foreground)	x	CAN	18	c X
Erase background	x	EM	19	c Y
Erase line	x	SUB	1A	c Z
Car screen	x	FS	1C	c \
Car foreground	x	GS	1D	c
Erase foreground	x	US	1F	c _
End character at cursor address	x	!	21	
Play test pattern " H "	x	"	22	
Buffered mode	x	#	23	
Conversational mode	x	\$	24	
Block X-mit mode	x	%	25	
Column back tab	x	'	27	
Page X-mit mode	x	(	28	
Note field transmit	x	)	29	
Auxiliary enabled no display (option )	x	*	2A	
Init all	x	+	2B	
Init unprotected only	x	-	2C	



Commands grouped per functionCursor commands

Cursor right		DLE	10	
Cursor left		BS	08	
Cursor home	x	DC2	12	
cursor up	x	FF	0C	
cursor down	x	VT	0B	
Direct cursor address	x	DC1	X Y	11
Line feed		LF	0A	
Carriage return		CR	0D	
Non stored carriage return	x	CR	0D	
Field tab forwards		HT	09	TA
Field tab backwards	x	DC4	14	s TA
Column tab forwards		SO	0E	c TA
Column tab backwards	x	'	27	cSTA
Read cursor address	x	ENQ	05	c E

Editing functions

Line insert	x	SUB	1A	
Line delete	x	DC3	13	
Character insert		local function	in buffered mod	
Character delete		local function	in buffered mod	
Clear screen	x	FS	1C	CI
Clear to end of screen BG	x	ETB	17	s CI
Clear to end of screen FG	x	CAN	18	scCI
Clear FG ( foreground )	x	GS	1D	CFG
Clear to end of field	x	SYN	16	CEC
Clear to end of line	x	SI	0F	c CI

Keyboard commands

Lock keyboard	x	NAK	15	c U
Unlock keyboard	x	ACK	06	c F
Sound alarm		BEL	07	c G

Code commands

Display in foreground	x	US	1E	c
-----------------------	---	----	----	---

Auxiliary port commands ( OPTION )

able aux.port no display	x	*	2A
able aux.port with display	x	/	2F
able aux.port	x	?	3F

Miscellaneous commands

ote X-mit ( as per mode set )	x	SO	,0E	c N
ote field X-mit	x	)	29	
d character at cursor address	x	!	21	
play test pattern " H "	x	"	22	
play all ASCII characters	x	8	38	

820510

VISA 30

THIS PAGE INTENTIONALLY LEFT BLANK

pendix Flf-test error messages

If a non-fatal error occurs, the self-test will display a character in the second column of line 1. The characters and their meaning are as follows:

ar.	RAM	ROM	COMM	KBD
A	x			
B		x		
C	x	x		
D			x	
E	x		x	
F		x	x	
G	x	x	x	
H				x
I	x			x
J		x		x
K	x	x		x
L			x	x
M	x		x	x
N		x	x	x
O	x	x	x	x

RAM	Random accessible memory.
ROM	Program memory.
COMM	Communication device.
KBD	Keyboard.



820510

VISA 30

THIS PAGE INTENTIONALLY LEFT BLANK



